1-20-2015

UNH-Sightlines Report: Colleges Reduced Carbon Emissions by 13% per Foot Since 2007

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January 20, 2015

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UNH Emissions Dropped 38% in Same Time Period

DURHAM, N.H. –A scientific analysis of energy usage and carbon emissions data from 343 U.S. colleges and universities found that emissions per square foot declined by 13 percent between 2007 and 2014, according to a new report from Sightlines and the University of New Hampshire Sustainability Institute.

The report found UNH's emissions reductions were significantly greater — 38 percent per square foot since 2007 — than the national average. The greater reductions can be largely attributed to two factors: the construction of the university's combined heat and power, or cogeneration, plant in 2006; and EcoLine, a landfill gas-to-energy project that uses methane gas from a nearby landfill as the primary fuel for the cogeneration plant.

"UNH owes its large reduction in greenhouse gas emissions, ultimately, to a leadership commitment to sustainability in all its forms. Particular credit goes to the time and collaborative creativity of the university's Energy Task Force, which has carefully stewarded our energy use and carbon emissions," said Tom Kelly, UNH's chief sustainability officer and director of its Sustainability Institute. "In addition, significant, forward-looking investments in two major technologies — our cogeneration plant and the EcoLine landfill gas-to-energy project —have helped us realize this major reduction in carbon emissions."

The first comprehensive report of its kind in higher education was based on a study of a collective 1.5 billion square feet of campus facilities, which are operated by 343 colleges and universities across 44 states.

The nationally representative sample consisted of both public (60 percent) and private (40 percent) institutions.

The UNH-Sightlines report found that while emissions per square foot dropped, energy usage per square foot was down just two percent over the identical eight-year period. This is because most of the progress in reducing campus carbon footprints came as a result of switching from coal and oil to natural gas rather than energy conservation or efficiency, according to the report.

"The disconnect between the decline in carbon emissions and the minimal change in energy consumption was surprising at first," said Jennifer Andrews, project director for the UNH Sustainability Institute. "We didn't anticipate that we'd see more success in campus emissions reductions from switching fuel sources than from energy conservation or efficiency, given that the

latter have traditionally been touted as the more cost-efficient and transformative strategies."

Andrews also noted that while the decline in carbon emissions per square foot is a positive step forward, the absolute decline in emissions was significantly smaller — about five percent over the same time frame — and essentially in line with the reduction in emissions reported by other U.S. industries. UNH stands out by this metric as well, with a 36 percent reduction in total greenhouse gas emissions.

"If we in higher ed truly want to be national leaders in tackling climate change, a continued shift to clean — ideally renewable — energy is obviously vital," she said. "In addition, however, these trends indicate a real need to drastically accelerate campus energy conservation efforts and efficiency investments."

The new findings on campus energy usage come in the aftermath of research published in Sightlines' 2015 "State of Facilities in Higher Education" report, which identified a trend of many campuses accumulating more space to maintain and fewer students to fill it.

"In the years following the Great Recession, colleges and universities experienced a strong period of increasing student enrollment, so many of them added new campus space to accommodate that growth," said James Kadamus, senior advisor at Sightlines, a leader in helping academic institutions better manage their facilities and capital investment strategies. "However, in the past few years we've started to see this trend reverse, as fewer students are coming out of high school and entering college. This means that campuses are actually increasing their carbon footprints by adding space."
Other key findings from the Sightlines-UNH report included the following:

- Campus size, density, age profile and capital investment portfolios are the four key drivers of carbon emissions and energy consumption.
- Campuses that shifted capital investment to include mechanical systems such as HVAC and utility infrastructure made more progress in reducing emissions and reducing energy use.
- Public campuses improved more than private campuses, possibly reflecting stronger public policy goals.
- Schools with buildings of an older age profile had to spend more just to keep consumption stable.
- Institutional commitment and leadership matters. For example, campuses that have signed on to the "Second Nature Climate Commitment" had lower emissions than non-signatories.

"It's also important to note that public policy and incentives are critical if we're going to make meaningful progress on this issue," said Kadamus. "Campuses in regions with strong energy incentives consumed less, while those in states with weaker policies consumed more. Likewise, campuses in regions where energy is cheap consumed more than campuses in high-cost regions, even when their climates were similar."

The report was based on data collected by Sightlines and analyzed using the Campus Carbon Calculator (CCC) methodology, created and made available by UNH and widely accepted as the preferred tool for calculating college and university greenhouse gas emissions. A web-based version of the CCC called CarbonMAP (Carbon Management and Analysis Platform) was developed in a

partnership between Sightlines and UNH, and has now been used by more than 550 North American campuses to measure and manage energy use and greenhouse gas emissions.

The full Sightlines-UNH report is here.

Representatives from Sightlines and UNH will host a free webinar on this report on January 27, 2016, at 1 p.m. Eastern Time. This webinar will give attendees the opportunity to hear from experts as they explore these issues in greater detail. To register, go to https://attendee.gotowebinar.com/register/3078989171299094273.

Founded in 2000, Sightlines is a subsidiary of The Gordian Group. Sightlines gives colleges and universities the independent data and perspective they need to make critical decisions about their most valuable assets — their facilities. Sightlines stewards the industry's most extensive verified database, allowing more than 450 institutions across the U.S. and Canada to benchmark an institution's facilities against universities and colleges across the nation.

The UNH Sustainability Institute facilitates integration of diverse perspectives, disciplines and knowledge to address sustainability's grand challenges. As a university-wide institute, it supports innovation across curriculum, operations, research and engagement. The institute acts as a cultivator and champion of sustainability on campus, in the state and region, and around the world, and is recognized for its unique, creative approach and thought leadership.

The University of New Hampshire, founded in 1866, is a world-class public research university with the feel of a New England liberal arts college. A land, sea, and space-grant university, UNH is the state's flagship public institution, enrolling 13,000 undergraduate and 2,500 graduate students across three campuses.

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